

ABSTRACT

A compression ignition internal combustion engine comprises a combustion chamber 16 to which air and fuel are supplied, an intake valve 19a for opening and closing a passage between the combustion chamber and an intake port 6 communicating with the combustion chamber, and an exhaust valve 19b for opening and closing a passage between the combustion chamber and an exhaust port 14 communicating with the combustion chamber. The temperature and pressure in the combustion chamber are increased to self-ignite an air-fuel mixture with the compressive operation of a piston after closing of the intake valve 19a. A fuel injection valve 11 injects pressurized air, serving as an ignition trigger factor, directly into the combustion chamber so that the air-fuel mixture under the expansion stroke of the piston is brought into an ignitable state. An ECU 1 controls the injection timing of the pressurized air depending on the ignition timing. The self-ignition timing can be controlled to a proper timing in a wide engine operating range with respect to a load and a revolution speed without changing the shape of the combustion chamber to a large extent.